CHAPTER 7
SITE PLANNING DESIGN COMPONENT

7-1 Introduction

7-1.1 Site Planning is the art of arranging an external physical environment in complete detail. Site plans are usually prepared by Landscape Architects. Site Planning, as a visual design component, includes the analysis of the overall organization of physical and natural spatial relationships.

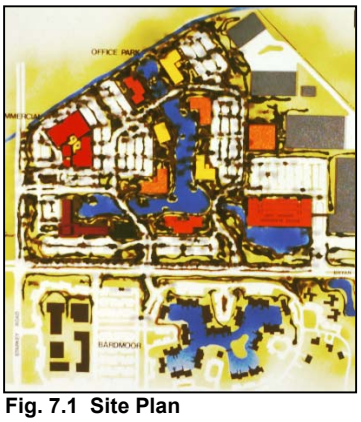


Fig. 7.1 Site Plan

7-1.2 The site planning component provides the spatial arrangement of the installation (Figs. 7.1 & 7.2). Site planning coordinates more site design in accordance with the installation master planning process. The other five design components are dependent upon site planning for their location and spatial relationships. The other five components are identified below and discussed in detail in Chapters 8-12:

- **Structures**
- **Circulation**
- **Plant Material**
- **Site Elements**
- **Force Protection**

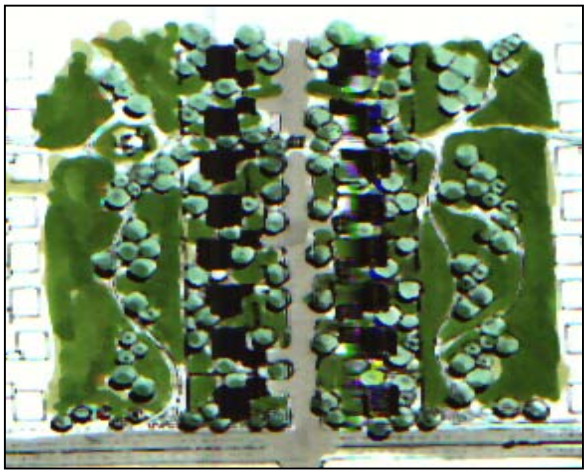


Fig. 7.2 Blend Natural and Manmade Elements

7-1.3 This chapter presents the visual and functional determinants that should be examined in order to identify the visual assets and liabilities of the spatial relationships determined by the site plan.

Fig 7.3 Development In Natural Preserve

7-2 Site Planning Objectives

7-2.1 The goal of site planning for existing and future installations is to produce a sustainable development. Sustainability

requires that the built environment is designed and constructed to preserve and enhance the natural environment (Fig. 7.3). The result is an investment in the future in which manmade facilities are designed as a part of the environment to minimize negative environmental impacts. General site planning techniques that result in sustainable development are cost efficient because they preserve energy and reduce construction and maintenance costs. Typical site planning objectives include:

7-2.1.1 Preserve natural site features such as topography, hydrology, vegetation, and tree cover (Fig. 7.4).

7-2.1.2 Locate facilities with consideration of climatic conditions such as wind, solar orientation, and microclimate.

7-2.1.3 Preserve the natural site by molding development to fit around existing land forms and features. This development approach minimizes extensive earthwork, preserves existing drainage patterns, and preserves existing vegetation (Fig. 7.5).

7-2.1.4 Plan for facilities to be clustered to preserve land and reduce construction costs. Clustering should occur on the flattest land areas. Room for expansion should be provided.

Fig. 7.4 Plan to Preserve Natural Environment

Fig. 7.5 Identify Natural Elements & Preserve

Fig. 7.6 Development Fits the Environment

7-3 Site Planning Considerations

7-3.1 The concept of sustainability as a part of installation design should result in design and development of installations that are more aware of and designed as a part of the natural features of the location and climate (Fig. 7.6).

7-3.2 The primary “fit” of the development to its environment is initially determined by the site plan. The determination of primary issues that provide basic location and organization of spatial relationships are determined during the site planning process. Site planning design criteria for

sustainable development can be applied to define and mitigate issues such as the following:

7-3.2.1 Which land is developable and which land should be preserved (Fig. 7.7)?

7-3.2.2 Which slopes are usable for development and which slopes should not be developed?

7-3.2.3 What climatic impacts exist that will affect the placement of buildings and other development?

7-3.2.4 What are the soil conditions and the soil impacts to development?

7-3.2.5 What are the hydrologic conditions in relation to the water table, drainage, and flood plains?

7-3.2.6 Which natural features should be preserved and enhanced (Fig 7.8)?

7-3.2.7 Which views should be preserved and enhanced, or screened and minimized?

7-3.2.8 Which vegetation is native to the region (Fig. 7.9)?

7-3.2.9 What exotics have been introduced?

7-3.3 The site planning considerations are part of the visual and spatial analysis of the installation and of the individual visual zones.

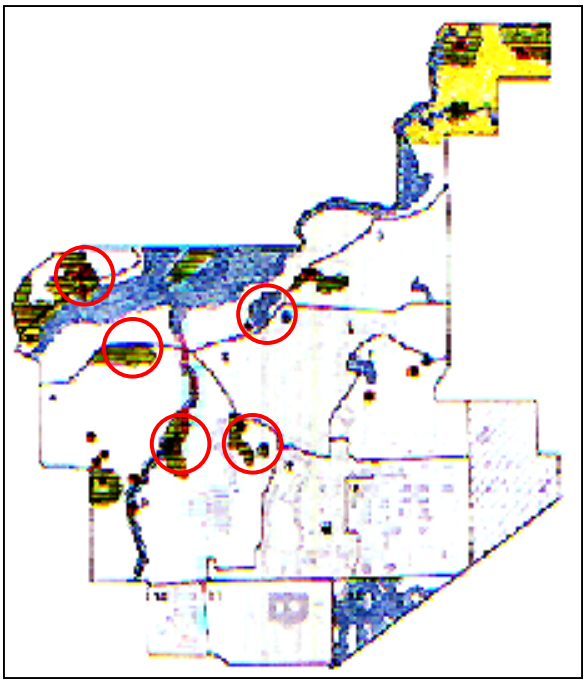


Fig. 7.7 Identify Natural Elements & Preserve

Fig. 7.8 Preserve Open Space

Fig. 7.9 Preserve Existing Trees

7-4 Site Planning Design Criteria

7-4.1 The following criteria should be utilized for the assessment of the visual and spatial impacts of site planning. Many of the criteria included are repeated in the lists of criteria for the other five components of visual assessment. The site planning component of installation design comes first in the design process and determines the general locations of the other components.

Therefore, site planning must consider the criteria for architectural design, circulation, landscape architecture, site elements, and security concerns.

7-4.2 Site planning design criteria is divided into two categories – natural conditions and manmade conditions.

7-5 Natural Conditions

7-5.1 The natural conditions that should be reviewed in determining assets and liabilities are listed below.

7-5.1.1 Topography - The natural terrain should be a major determinant of layout and form of the installation (Fig 7.10). The following general guidelines should be used to maintain the natural topography of the installation.

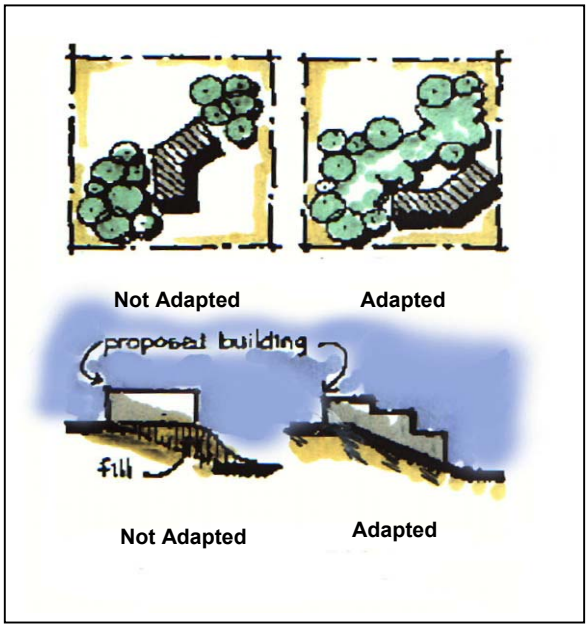


Fig. 7.10 Accommodate Natural Conditions

7-5.1.1.1 Maintain natural ground slopes and elevations.

7-5.1.1.2 Align roadways and buildings along topographic lines.

7-5.1.1.3 Locate facilities that have expansive ground coverage on relatively flat terrain.

7-5.1.1.4 Use moderately sloping areas for buildings with less ground coverage areas.

7-5.1.1.5 Avoid development on steep slopes. (Fig. 7.11)

7-5.1.1.6 Avoid development in natural drainage ways and flood plains. Flood plain development should be limited to open space and recreation use.

7-5.1.1.7 Provide a reasonable balance of cut and fill.

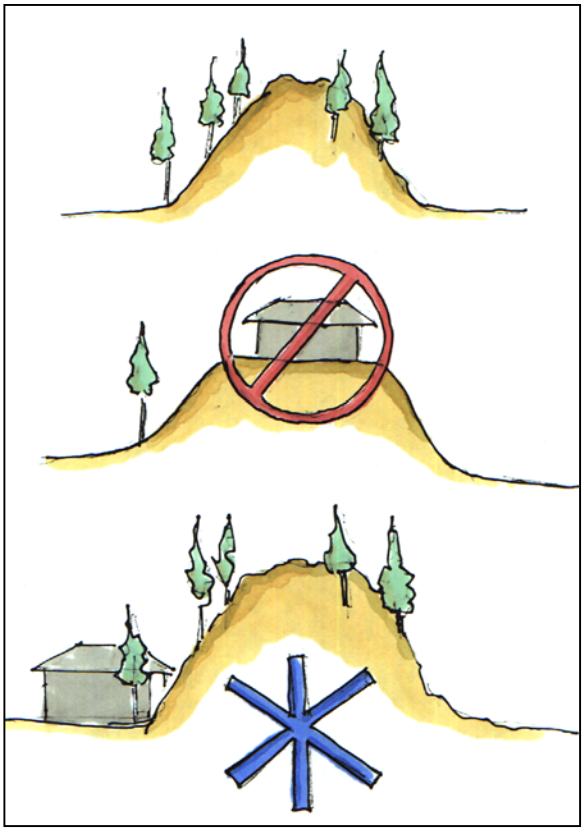


Fig. 7.11 Develop Around Natural Landforms

7-5.1.2 Hydrology - The installation should be designed to include the following concerns for natural drainage corridors, floodplains and waterways:

7-5.1.2.1 Preserve and maintain natural drainage areas and floodplains.

7-5.1.2.2 Limit development in flood plains to open space and recreation uses.

7-5.1.2.3 Preserve rivers, lakes, streams, or other waterways and incorporate them into the design layout.

7-5.1.3 Climate - The installation should be designed in response to local climatic conditions to provide a more comfortable environment, and reduce the demands for heating and cooling (Fig. 7.12). The following general guidelines are for the four most prevalent climatic regions:

7-5.1.3.1 Cool Regions - Design and site development by maximizing the warming effect of solar radiation in winter and reducing the impact of cold winter winds.

7-5.1.3.2 Temperate Regions - Design and site development to balance the effects of seasonal thermal variations promoting both winter warming and summer cooling in terms of seasonal solar orientation and prevailing wind direction.

7-5.1.3.3 Hot Arid Regions - Design and site development to minimize solar heat gain and maximize shade and encourage humidity in outdoor spaces.

7-5.1.3.4 Hot Humid Regions - Design and site development to minimize solar heat gain and promote air movement and cross ventilation.

7-5.1.4 Views - The installation should be designed to preserve and enhance scenic and other attractive views and vistas, and to screen unattractive views and vistas.

7-5.1.5 Vegetation - The installation should be designed to protect and preserve existing native vegetation. This preservation reduces maintenance and enhances sustainability.

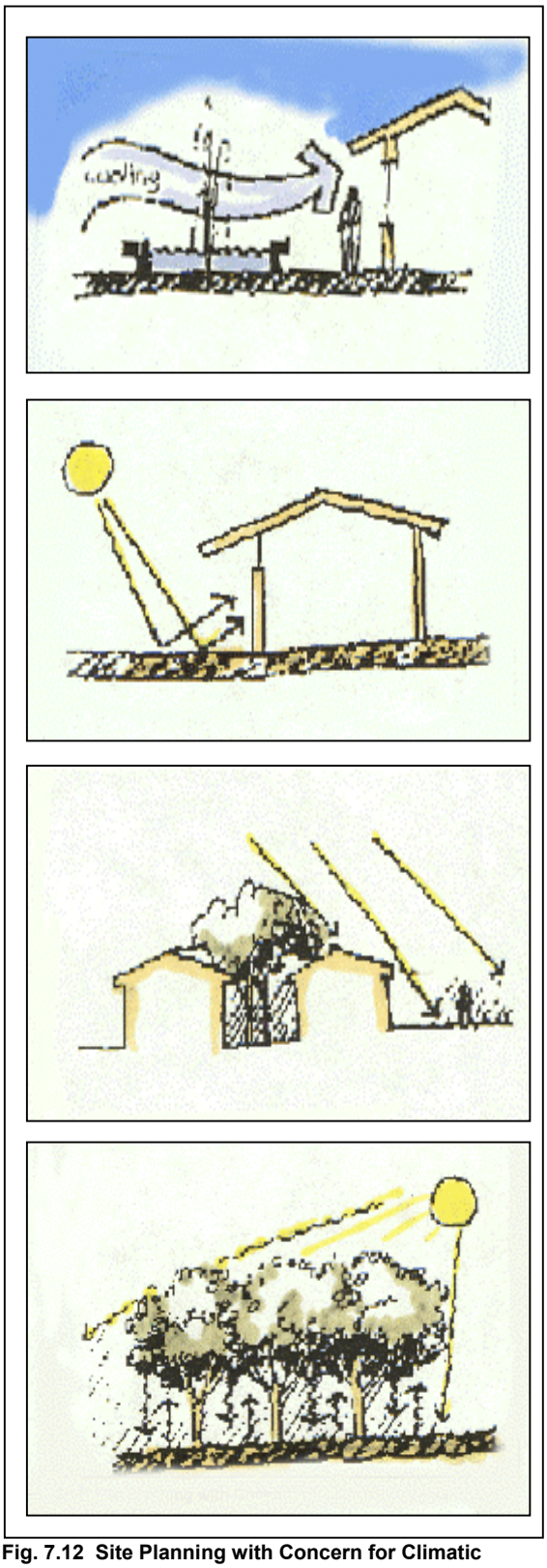


Fig. 7.12 Site Planning with Concern for Climatic Impacts

7-6 Manmade Site Conditions

7-6.1 The site plan provides the locations of the manmade development that will occur on site. It establishes the spatial relationships as well as the relationships between manmade and existing natural features. Manmade site conditions include all development on the installation buildings, roadways, parking lots, walkways, walls, fences, utilities, and other facilities. Buildings, roadways, parking lots, and above ground utilities are the primary manmade visual determinants.

7-6.2 The following site planning guidelines should be used in the visual and spatial review of the installation:

7-6.2.1 Cluster buildings to reduce impact on the natural environment, and reduce roadways and utility corridors needed to serve the development.

7-6.2.2 Locate large buildings in relatively flat areas to reduce the cut and fill and preserve natural vegetation and drainage (Fig. 7-13).

7-6.2.3 Minimize solar heat gain for cooling and maximize solar heat gain and retention for heating.

7-6.2.4 Site buildings with consideration for the microclimate conditions of the site that result in variances in wind or light because of adjacent land forms, structures, or trees (Fig. 7.14).

7-6.2.4.1 Orient outdoor pedestrian areas for most comfortable exposure (Fig 7.15).

7-6.2.4.2 Utilize lighter colored building surfaces exposed to the sun and darker colors on recessed surfaces to absorb radiation

7-6.2.4.3 Orient windows according to impacts of climatic conditions.

Fig. 7.13 Locate Large Buildings on Flat Areas

Fig. 7.14 Orient To Climatic Conditions

Fig. 7.15 Orient Outdoor Areas for Comfortable Exposure

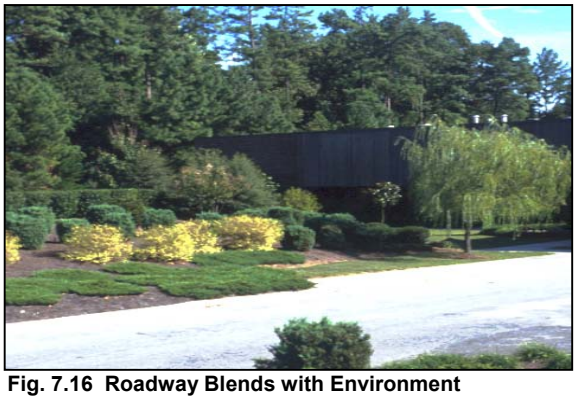


Fig. 7.16 Roadway Blends with Environment

7-6.2.4.4 Locate development on the leeward side of hills.

7-6.2.5 Design and locate roads to provide a hierarchy of traffic carrying capacities.

7-6.2.6 Locate roads to blend with topography and vegetation (Fig. 7.16).

7-6.2.7 Design and locate parking lots to minimize visual impact of broad expanses of pavement and vehicles.

7-6.2.8 Design and locate pedestrian walkways and bicycle paths to fit the physical environment, and provide a comfortable pedestrian experience, limiting conflicts with vehicular traffic.

7-6.2.9 Locate trees and shrubs to buffer harsh natural conditions.

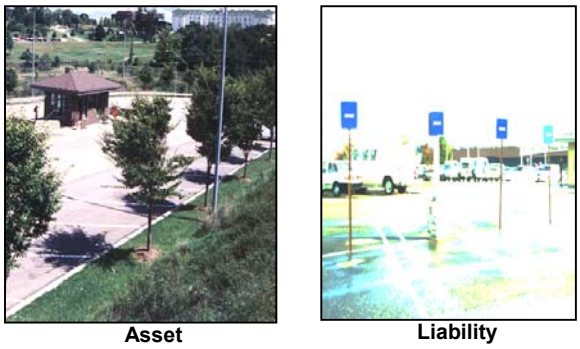
7-6.2.10 Deciduous material provides for sun in the winter and shade in the summer. Evergreen material provides wind breaks for cold north winds.

7-6.2.11 Design and locate site elements to blend with and enhance the physical environment.

7-6.2.12 Security requirements should be designed and located to blend with the physical environment.

7-7 Site Planning Assets & Liabilities

The survey of the visual zones should result in a list of assets and liabilities for Site Planning in each of the visual zones. These should be listed in the installation design manual and followed by a list of recommendations for projects that will enhance the assets and minimize the liabilities (Figs. 7.17-7.19).

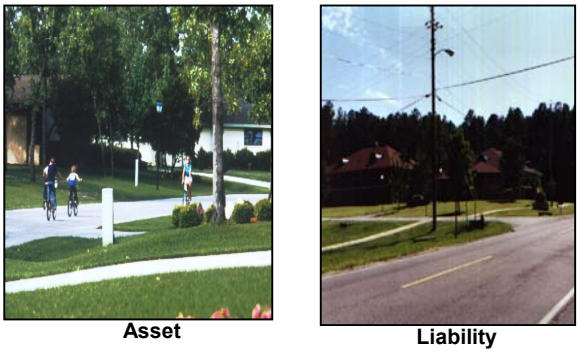


Asset Liability

Fig. 7.17 Minimize Visual Impacts of Parking Lots

Asset Liability

Fig. 7.18 Provide Comfortable Pedestrian Experience



Asset Liability

Fig. 7.19 Minimize Visual Impact of Utilities